Cryptogamic botany. He also published a fungus flora of Australia and many papers of scientific importance, besides innumerable minor articles. His industry is further attested by the presence in the Kew collections of about 25,000 of his drawings of fungi. During later years, especially, he wrote popular books, and also turned his attention to other fields of cryptogamic botany.

After his retirement in 1892 Cooke retained his interest in fungi, and until 1904 attended the annual fungus foray of the Essex Field Club. Recently his eyesight failed, though his mind remained keen and active. He was honorary M.A. of Yale, and LL.D., and in 1903 he had the honour of being awarded the gold medal of the Linnean Society. A. D. C.

NOTES.

The King has been pleased to approve of the following awards this year by the president and council of the Royal Society:—A Royal medal to Prof. E. W. Brown, F.R.S., for his investigations in astronomy, chiefly in lunar theory; a Royal medal to Prof. W. J. Sollas, F.R.S., for his researches in palæontology, especially in the development of new methods. The following awards have also been made by the president and council:—The Copley medal to Sir Joseph Thomson, O.M., F.R.S., for his discoveries in physical science; the Rumford medal to the Rt. Hon. the Lord Rayleigh, O.M., F.R.S., for his numerous researches in optics; the Davy medal to Prof. W. J. Pope, F.R.S., for his researches on stereochemistry and on the relations between crystalline form and chemical constitution; the Darwin medal to Prof. E. B. Poulton, F.R.S., for his researches in heredity; the Hughes medal to Prof. J. S. Townsend, F.R.S., for his researches on electric behaviour of gases.

National regret at the death of Lord Roberts on Saturday last, as the result of a chill caught while on a visit to France to see the Indian troops, is shared by men of science. Throughout his career Lord Roberts stood for scientific organisation and individual efficiency; and to the last day of his life he was concerned with undertaking useful services for his country. In the field his success was the fruit of careful forethought, boldness, and vigour; when an administrator he laid stress on the encouragement of intelligence and initiative among soldiers of all ranks; and after his retirement from active service he devoted the remainder of his days to advocating the encouragement of rifle shooting as a national pursuit, and the establishment of a system of obligatory physical training. He saw the needs of his country and did his best to educate public opinion in favour of a remedy for them. In Lord Roberts the attributes of duty and self-sacrifice were represented at their highest, and the whole Empire mourns that he has now passed into silence.

The council of the Physical Society of London has decided not to hold the annual exhibition of physical apparatus this year.

The eighty-ninth Christmas course of juvenile lectures, founded at the Royal Institution in 1826 by Michael Faraday, will be delivered this year by Prof. C. V. Boys, his title being "Science in the Home."

We regret to learn of the death, at sixty-five years of age, of Dr. J. Borgmann, professor of physics in the University of Petrograd, and author of various works on electricity and magnetism.

We regret to announce that Prof. August Weismann, professor of zoology in the University of Freiburg-im-Breisgau since 1867, foreign member of the Royal Society, and of world-wide distinction as a biologist, died on November 5 at eighty years of age.

At the annual meeting of the London Mathematical Society, held on November 12, the De Morgan medal was presented to Sir Joseph Larmor in recognition of his researches in mathematics and mathematical physics.

A fairly strong earthquake was felt over Jamaica on October 15 (see Nature, vol. xciv., p. 207). A month later, on November 15, two other shocks were felt, the first at 12.50 a.m., of considerable force, and lasting seven or eight seconds; the second, a slighter shock, between 8 and 9 a.m. No serious damage was caused by either shock.

Mr. W. S. Adams, Mount Wilson Solar Observatory, California; Prof. H. Andoyer, professor of physical astronomy in the Sorbonne, Paris; and Dr. F. Schlesinger, director of the Allegheny Observatory, and professor of astronomy, University of Pittsburgh, U.S.A., have been elected associates of the Royal Astronomical Society.

It is announced in the *London Gazette* that the King has appointed Mr. T. H. Warren, president of Magdalen College, Oxford, to be Knight Commander of the Royal Victorian Order, and Mr. C. G. Robertson, fellow of All Souls' College, and senior tutor in modern history at Magdalen College, Oxford, to be Commander.

For several years Prof. W. B. Bottomley, King's College, London, has been working on the bacterial treatment of peat; and some results of the investigation have been described in papers presented to the Royal Society and the British Association. The Board of Agriculture has now made a grant of 150*l.* to the botanical department of King's College in aid of research on the subject of the probable accessory food-substances in humus and "bacterised" peat, a condition of the grant being "that reasonable facilities will be accorded to any accredited scientific worker who may desire to undertake investigations in connection with 'bacterised' peat."

At the anniversary meeting of the Mineralogical Society, held on November 10, the following officers and members of council were elected:—*President*: Dr. A. E. H. Tutton. *Vice-Presidents*: Prof. H. L. Bowman and Dr. A. Hutchinson. *Treasurer*: Sir William P. Beale, Bart. *General Secretary*: Dr. G. T. Prior. *Foreign Secretary*: Prof. W. W. Watts. *Editor of the Journal*: Mr. L. J. Spencer. *Ordinary Members of Council*: Mr. F. H. Butler, Mr. J. P. De Castro, Mr. B. Kitto, Prof. A. Liversidge, Dr. J. J. Harris

Teall, Mr. F. N. Ashcroft, Prof. H. Hilton, Mr. A. Russell, Mr. W. Campbell Smith, Dr. J. W. Evans, Dr. F. H. Hatch, and Mr. J. A. Howe.

AT a meeting of the council of the British Association, held on November 6, it was resolved:—"That the council of the British Association for the Advancement of Science, at its first meeting in London since the return of members from Australia, desires to place on record its high appreciation of the generous reception given to the members of the overseas party throughout the Commonwealth by representatives of the Governments of the Commonwealth and the States, and by other authorities and Australian citizens generally, on the occasion of the meeting of the association in Australia in 1914. The council hereby expresses its grateful thanks for the hospitality, privileges, and concessions extended so freely to visiting members, and also for the willing and valuable collaboration of all those who undertook so successfully the work of organisation in Australia in connection with the meeting."

BY the death of Sir Walter Gilbey at Elsenham Hall, his Essex residence, on November 12, the country is distinctly the poorer, as the deceased baronet had an unsurpassed practical knowledge of horses and horse-breeding, more especially as regards "shires," hackneys, and ponies. His two little books on these breeds are models of what such works should be, teeming, as they are, with practical and historical information condensed into the briefest possible space. Sir Walter was the founder of the Shire Horse Society, which published its first stud-book in 1880, and held its first show at the Agricultural Hall in 1881. He also took an active part in the establishment of both the Hackney Horse Society and the Hunters' Improvement Society, and he was likewise instrumental in diverting the grants for "Queen's Plates" to the more useful purpose of premiums for thoroughbred sires. He was in turn president of both the Shire Horse and the Hunters' Improvement Society. It may be added that Sir Walter did no less good service for stock-breeding and agriculture in general. He had attained the ripe age of eighty-three years.

AMERICA has lost one of her leading geographers by the death, in his sixty-ninth year, of Mr. Henry Gannett. After graduating at the Harvard Scientific and Mining Schools, he was for a short time an assistant at the Harvard Observatory. From 1872 to 1879 he acted as topographer for the Hayden Survey of the Territories. When the U.S. Bureau of Geological Survey was established in 1879, Mr. Gannett assisted in planning out its work, and from 1882 until his death he held the position of its chief geographer. He was geographer to three decennial censuses and to the Conservation Commission of 1908–9, chairman of the U.S. Geographical Board, and president of the National Geographic Society. His published works included gazetteers of twelve States, the statistical atlases of three censuses, the contour map of the United States, a manual of topographic surveying, and numerous official reports. In an editorial note on his career the New York *Evening Post* pays him the tribute that, in spite of the notable results of his own industry, it is as a stimulator of other geographers and map-makers that he chiefly deserves to be remembered.

WE are glad to see again the familiar pages of the *Revue Scientifique*, the publication of which was suspended at the beginning of August, on account of the war. The number which has just reached us is the first to be published since August 1, and it bears the date August 8–November 14. The main part of the issue is made up of the papers upon the nature and treatment of wounds, presented to the Paris Academy of Sciences on August 10 and September 28, and referred to already in our columns. Following these is a translation of the statement signed by German professors as to the cause of the war, with a complete list of signatures, and replies to the manifesto made by the Academy of Sciences, the French Academy, Institute of France, representatives of Russian art, literature, and science, and British scholars. Sir William Ramsay's article on "Germany's Aims and Ambitions" is translated from NATURE of October 8, and there is also a translation of the letter from Dr. C. W. Eliot, president of Harvard University, published in the *New York Times* of October 2. We trust that our contemporary will find it possible to continue its weekly issue as formerly. *La Nature*, which suspended publication on August 1, has not yet started a re-issue.

ACCOUNTS of the valuable work which the officers of the Royal Army Medical Corps have accomplished in Boulogne for our wounded are given in the *Times* of November 10 and 14. The description of the Boulogne hospitals affords a clear picture of the very best sort of hospital administration and practice, thanks to Colonel Lynden Bell, Sir Almroth Wright, and all members of the staff and nursing staff of each hospital. From the potent and unfamiliar infections of the Belgian soil, which has been under intensive cultivation and incessant manuring for a quarter of a century, comes a host of troubles. The majority of the wounds are contaminated at the moment of infliction. The usual ritual of the antiseptic and aseptic method, perfect in time of peace for this or that formal operation of surgery in a placid, well-appointed hospital, may not suffice for the treatment of men wounded in the trenches by shrapnel or shell fragments, their clothes and their skins caked thick with mud, and that mud carrying dangers of its own. Against the risk of tetanus, we have the protective use of the tetanus antitoxin; against gangrene, we have the injections of oxygenated water, and the later "open-air" treatment of the wound, and there are other methods by which science is used to reduce suffering at the Boulogne hospital base and elsewhere.

IN *Man* for November, Prof. Carveth Read examines the question of the differentiation of man from the anthropoids. He dwells on the importance of the change from a vegetable to a carnivorous diet on the habits, functions, and structure which distinguish man from the higher apes. This change of diet, he urges, explains the adaptation of our species to a ground-life and to a world-wide diffusion. This involves social co-operation, the growth of articulate speech, the invention of weapons, and the discovery of the use of fire. Again, it involves the growth of the erect gait and of other modifications in the bodily structure. He urges that if this hypothesis be not accepted, man is an exception to the rule of animal life—that the structure of every organism is made up of apparatus subserving its special conditions of nutrition and reproduction.

WITH part viii. of his useful periodical, *Visvakarma* Mr. A. K. Coomaraswamy has for the present suspended its publication. The work contains one hundred examples of Indian architecture, sculpture, painting, and handicrafts. Mr. Eric Gill supplies a rather flamboyant introduction. The nineteenth century, he tells us, "for all its hard-headedness, was soft-hearted and loose-thinking." The newly awakened interest in Oriental art is, he thinks, "a genuine reaction against the irreligious gentility and banality of modern European art." There is some excuse for this acrid criticism, and *Visvakarma* helps to show that the art of India has much to interest the European student. But the cause of Oriental art will scarcely be promoted by disparagement of the aims and methods of European artists.

MESSRS. C. A. Hall and Duncan Smith have reprinted from the Transactions of the Paisley Philosophical Institution, 1914, a paper dealing with the geological and historical significance of some hazel nuts and other plant remains discovered during excavations at Paisley Abbey in March, 1914. These remains rested on the gravel of an ancient sea-beach, which is believed to be the 25-ft. raised beach, a pronounced feature in various parts of the Clyde area. This, after attaining its maximum elevation, was depressed and submerged. When hazel trees grew in this area it was some 25 ft. lower than it is at present. The writers, associating Neolithic man with the 25-ft. raised beach period, urge that their investigation forms a fresh link in the chain of evidence by which the age of Neolithic man may be determined.

A CLASS in mineralogy, with free access to a representative series of specimens, is the latest development of the Children's Museum, Bedford Park, Brooklyn. The collection of minerals, according to the November number of the *Children's Museum News*, has also been rearranged and expanded, economic uses being the basis of classification.

"THE Middle Triassic Marine Invertebrate Faunas of North America" is the title of a very fully illustrated memoir by Prof. J. Perrin Smith, published in Washington by the Department of the Interior (U.S. Geological Survey) as Professional Paper No. 83. It deals chiefly with cephalopods, especially ceratites and other ammonoid groups, 142 out of the 148 pages of letterpress being devoted to that class. In Triassic times the sea, which had previously covered large portions of the area now occupied by the North American continent, had retreated westwards until it formed only a gulf in the region of the Great Basin. The most remarkable feature of the fauna of the Middle Triassic beds of this tract is its complete lack of relationship to that of Japan, and its marked affinity to that of south-eastern Europe. It is, in fact, of "such a distinctly Mediterranean character that if a palæontologist from Austria were set down in the Triassic area of the Humboldt desert he could hardly tell from the character of the fauna whether he was collecting in Bosnia or in Nevada."

PROF. PERRIN SMITH's work on the Triassic ammonoids referred to in the preceding paragraph was doubtless the forerunner of a paper on accelerated development in fossil cephalopods, issued in the Leland Stanford Junior University Publications, University Series, for 1914. To do justice to this thoughtful communication would take much more space than is at our disposal; and it must suffice to state that, owing to the compression of the earlier stages, a large number of groups do not exhibit a recapitulation of their ontogenetic history. There is, in fact, a constant loss of stages or characters, which become pushed back and finally crowded out of the ontogeny, all along the race-history, so that successive types do not exhibit their full genealogical story. In addition is "convergence," which, in ammonites, has rendered a number of types descended from perfectly distinct ancestors so alike as totally to defy recognition of their genealogy.

MR. FREDERICK CHAPMAN provides a comprehensive review of the Cainozoic strata of Australia in the fifth memoir of the National Museum, Melbourne (July, 1914). He shows that the supposed nummulites of Australia should be referred to Amphistegina, and regards the earliest beds of what he calls "the Australian Cainozoic system" as of Oligocene age. The correlation of the strata with those of Europe, and the description of typical sections, make this paper especially welcome.

THE inspiring story of the rise and progress of the Scottish school of geology was selected by Prof. T. J. Jehu as the subject of his inaugural lecture as Murchison professor of geology and mineralogy in the University of Edinburgh. Due stress was laid in this discourse on the influence of Sir Andrew Ramsay, T. F. Jameson, Sir Arch. Geikie, also Prof. J. Geikie and other Scottish workers, in promoting a just appreciation of glacial phenomena in our islands.

PROF. GÜRICH, of Hamburg, has published (Borntraeger, Berlin, price 5.50 marks) an illustrated account of "Die geologischen Naturdenkmäler des Riesengebirges," which forms a scientific guide to a region of granite tors and ice-worn hollows which has been little visited by strangers. The fine view of the Schistose Schneekoppe (1605 miles) reminds us of our own highlands, where the cirques are becoming modified by downwash and general decay. A block of orbicular granite is figured, which is probably of local origin. This, like other natural monuments in the district, has been put under special guardianship.

ONE of the most interesting and readable memoirs issued in the Clare Island Survey series is by T. Hallissy on the geology of the island (Proc. Royal

Irish Academy, vol. xxxi., part 7, price 1s. 6d.). Reference is made for further details to the memoir recently published by the Geological Survey of Ireland; but the present account shows especially how the district was influenced by the ice of glacial times, and an excellent series of illustrations has been included, most of which were hitherto unpublished. The map of Clew Bay and its numerous partially-drowned drumlins will interest those who have entered Boston harbour from the sea. The large coloured geological map is repeated, by arrangement with the Controller of the Stationery Office, from the Geological Survey memoir.

We have frequently taken occasion to refute some of the long-lived popular fallacies relating to the weather. The *Scientific American* of October 24 refers to a statement in a recent London weekly journal that "it is one of the extraordinary things of warfare that a big battle invariably produces rain." Our American contemporary has no difficulty in refuting the "particularly fatuous fallacy" that a battle could have any appreciable effect on the temperature or humidity of the air, upon which conditions rainfall depends. He points out that rainfall may follow battles for various reasons, *e.g.* meteorological records in northern France show an average of about 157 rain-days per annum, according to which rain might possibly fall about every other day. Recent literature upon the subject is abundant and conclusive; as one instance we may refer to an interesting and instructive article by Prof. Cleveland Abbe in the United States *Popular Science Monthly* of January, 1911, which shows by laboratory experiments that the firing of cannon or dynamite to produce rain cannot possibly succeed. We may also mention a pertinent communication to *Symons's Meteorological Magazine* of March, 1911, in which Mr. F. Gaster (formerly of the Meteorological Office) pointed out that at Shoeburyness, where great guns are fired almost daily, the average rainfall is probably the smallest in the United Kingdom.

The Committee of the Institution of Civil Engineers, which has been making inquiries as to the best course of training for engineers, mentions in its report that one firm considered technically trained men of "no use for dividend earning." Mr. F. M. Denton, in a letter in the *Electrician* of November 6, points out that this prejudice against technical college-trained men on the part of engineering firms has cost us very dearly in the past, much of our best trade, and more new trade we should have liked, having gone to our rivals. The hope of regaining and retaining this trade in the future is, he considers, elusive unless manufacturers are prepared to recognise that a technical training permits a man to see further than he would otherwise do, and that research carried out by such men has been responsible for practically all the advance in heavy electrical engineering in recent years. We cannot as a nation content ourselves with merely making and selling what others have developed, but must provide our own army of research, and lead instead of following.

In the *Comptes rendus* for November 3 M. G. Lippmann directs attention to the possibility of applying the Hughes induction balance to military surgery. This invention, it is remarked, appears to-day to be totally forgotten. It consists of a battery, two small induction coils, a contact-breaker, and a telephone, the connections being crossed in the primary circuit so that the induced electromotive forces are in contrary directions. The coils can then be adjusted so that no sound is heard in the telephone in the secondary circuit. On the approach of a metallic mass to one of the bobbins, a sound is heard in the telephone. If the metal is magnetic, as is the case with a fragment of shell or a German bullet, the effect is more marked; French and German bullets can in this way be distinguished. M. Lippmann thinks the apparatus should be useful in military surgery, as it is easily made in numbers, simple to use, portable, and cheap.

Aluminium is now employed to a greater or less extent in almost all engineering and allied trades, but it is doubtful if the full extent and variety of its applications are generally recognised. About 60,000 tons of the material are produced every year. *Engineering* for November 13 points out that there is no reason why the foundry of a general engineering shop should not produce aluminium castings in the same way that it now produces those of the copper alloys. Probably the reason for the neglected use of aluminium is that the average engineer is not practised in the manipulation of this metal. A quite definite case can be made out for the employment of aluminium for low-tension electric cables, particularly those of large section. There are a number of important installations in existence, *e.g.* the Paris General Omnibus Company has 650 tons of aluminium cables, yet on the whole the material does not occupy the position which might be expected. There is little doubt that in many cases copper cables are now being installed where important saving might be made by employing aluminium.

OUR ASTRONOMICAL COLUMN.

Comet 1914*d* (Lunt).—The comet discovered by Dr. Lunt at the Cape Observatory is travelling northward, and the elements and ephemeris (the *Observatory*, November) have been calculated by Drs. Hough and Halm, and these are as follows:—

Elements.

T = .914 August 4·91638 G.M.T.

$$\left.\begin{aligned} \omega &= 269^\circ\ 53{\cdot}6' \\ \Omega &= 0^\circ\ 22{\cdot}5' \\ i &= 77^\circ\ 53{\cdot}3' \end{aligned}\right\} 1914{\cdot}0$$

$\log q = 9{\cdot}85024$

Ephemeris for Greenwich Midnight.

		R.A. h. m. s.		Decl. ° ′
Nov. 18	...	21 51 8	...	+8 27
22	...	53 20	...	9 13
26	...	55 41	...	9 56
30	...	21 58 21	...	10 38

It is stated that the corrections to the above on October 11 were −20s., +7′, and on October 17 −25s., +11′.